

REMARKS

Applicant respectfully requests the Examiner's consideration of the present application as amended.

Summary of Office Action

Claims 1-20 were pending.

The drawings were objected to.

The specification was objected to.

Claims 4, 7, and 15 were rejected under 35 U.S.C. § 112.

Claims 1-4, 8, 9, 12-15, 18, and 19 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,603,323 B1 of Miller, et al. ("Miller") in view of U.S. Patent No. 6,434,647 of Bittner ("Bittner").

Claims 5-7, 16, and 17 were rejected under 35 U.S.C. § 103 as being unpatentable over Miller and U.S. Patent Application 2001/0035768 of Garlepp, et al. ("Garlepp").

Claim 10 was rejected under 35 U.S.C. § 103 as being unpatentable over Miller and Bittner in view of U.S. Patent No. 6,011,710 of Wiggers ("Wiggers").

Claims 11 and 20 were rejected under 35 U.S.C. § 103 as being unpatentable over Miller and Bittner in view of U.S. Patent No. 5,572,685 of Fisher, et al. ("Fisher").

Summary of Amendments

The specification was amended at page 6, Tables 1 and 2 to correct clerical errors. The specification was amended at page 7 to include reference characters illustrated in Figure 2. The specification was amended at page 10 to correct references to reference characters of Figure 5.

Claims 6,8 were canceled. Claims 1, 3, 4, 5, 7, 12, 14, 15, 16, and 17 have been amended.

Figure 1 has been amended to include a reference to an active component 111. The specification has been amended at page 6 to include a reference to the character reference number 111.

Applicant respectfully submits that support for the amendments are found in the specification including the claims as originally filed. For example, support for the amendment to Figure 1 is found in claim 10 and at page 11, line 25 of the specification as originally filed.

Applicant submits that the amendments to the claims and the specification do not add new matter.

Response to objections to the drawings

The drawings were objected to because the reference characters 220 and 230 of Figure 2 were not used in the specification (12/17/2003 Office Action, p. 2). As indicated above, the specification has been amended to refer to reference characters 220 and 230.

The drawings were also objected to because “they fail to show the isolation circuitry comprising active components as described in the specification”.

Accompanying this Amendment is a replacement sheet for Figures 1-2 of the drawings. Figure 1 has been amended to illustrate an isolation circuitry comprising an active component 111. The specification has been amended at page 6 to include a reference to the character reference number 111.

Applicant respectfully submits that the objections to the drawings have been overcome.

Response to objections to the specification

The specification was objected to. In particular, the Examiner indicated that the text of Table 2 did not make sense in light of the current value range. In addition, the Examiner suggested an amendment to correct an incorrect reference to character reference numbers illustrated in Figure 5. (12/17/2003 Office Action, p. 2)

As stated above, the specification was amended. Applicant respectfully submits that the amendments to the specification at page 6 resolved the Examiner's concern regarding the current ranges. The amendment to page 10 corrected the reference to character reference numbers 520 and 530.

Applicant respectfully submits that the objections to the specification have been overcome.

Response to 35 U.S.C. § 112 rejections

The Examiner rejected claims 4, 7, and 15 as being indefinite for the use of the word "approximately". None of the amended claims includes such language. Applicant respectfully submits, however, that one skilled in the art would understand that discrete resistors are available in standardized values and that such resistors have a known tolerance variation. If standard values are used, one would choose the appropriate resistance that met the requirement after tolerances were accounted for. One example is provided at page 10, lines 7-9.

Applicant respectfully submits the 35 U.S.C. § 112 rejections have been overcome.

Response to 35 U.S.C. § 103 rejections

Claims 1-4, 8, 9, 12-15, 18 and 19 were rejected as being unpatentable over Miller and Bittner. Applicant respectfully submits that none of Miller or Bittner alone or combined teaches or discloses each signal line of the common bus *having a current limiting element RA that is d.c. coupled to a first supply level*.

Applicant respectfully submits that no termination impedance is disclosed for the common bus (91-94) of Miller identified by the Examiner. Applicant traverses the Examiner's suggestion that the references could be combined for the reasons indicated by the Examiner. For example, unless the bus of Miller is intended to be a reflected wave bus, combining the wave filter of Bittner with the bus of Miller may render Miller's bus inoperative.

Assuming *arguendo* that the references could be combined, applicant respectfully submits that the Examiner is not free to extract the resistor and ignore the capacitor of Bittner's RC wave filter. Bittner teaches partial dampening of a reflected wave bus 10 with RC filters 130. As noted by Bittner, dampening waves for a reflected wave bus is already contrary to accepted practice. (Bittner, col. 3, lines 4-7). The use of a resistor to the exclusion of a capacitor (i.e., no RC filter) would render the reflected wave bus inoperable because such a terminator would eliminate the reflections that are required for proper switching. Bittner's capacitor prevents d.c. coupling of Bittner's "current limiting element" to any supply level.

Applicant respectfully submits that none of Miller or Bittner combined teaches or discloses *each signal line of the common bus having a current limiting element RA that is d.c. coupled to a first supply level*.

In contrast, claims 1 and 12 include the language:

1. A backplane apparatus comprising:
 - a common bus comprising a plurality of signal lines, *each signal line of the common bus having a current limiting element of impedance RA d.c. coupled to a first supply level; and*
 - isolation circuitry for electrically coupling each of the plurality of signal lines of the common bus to a corresponding plurality of signal lines of an electronic device to enable communication between the common bus and the electronic device through the isolation circuitry, the isolation circuitry having an impedance RD, wherein $(RA+RD) \geq 3.3K\Omega$, wherein $RD \leq 25K\Omega$.

(Claim 1, as amended)(*emphasis added*)

12. A backplane apparatus comprising:
 - a common bus comprising a plurality of signal lines, *each signal line having first terminal of an associated first current limiting element d.c. coupled to a first supply level, the first current limiting element of impedance RA;*
 - isolation circuitry electrically coupling each of the plurality of signal lines of the common bus to a plurality of electronic devices, each device having a corresponding plurality of signal lines to enable communication of signals between the common bus and the plurality of electronic devices; and
 - switching circuitry for each signal line of the common bus, wherein each switching circuitry selectively couples a second terminal of the associated first current limiting element to a second supply level to select a logic level of the associated signal line.

(Claim 12, as amended)(*emphasis added*)

With respect to claim 1, applicant further submits that *none of Miller or Bittner alone or combined teaches or discloses the values for the isolation circuitry*
 $(RD \leq 25 K\Omega$ or constraints on the values $(RA+RD) \geq 3.3K \Omega$.

1. A backplane apparatus comprising:
 - a common bus comprising a plurality of signal lines, *each signal line of the common bus having a current limiting element of impedance RA d.c. coupled to a first supply level; and*
 - isolation circuitry for electrically coupling each of the plurality of signal lines of the common bus to a corresponding plurality of signal lines of an electronic device to enable communication between the common bus and the electronic device through the isolation circuitry, *the isolation circuitry having an impedance RD, wherein $(RA+RD) \geq 3.3K\Omega$, wherein $RD \leq 25K\Omega$.*

(Claim 1, as amended)(*emphasis added*)

Applicant respectfully submits that the remaining rejections under 35 U.S.C. § 103 were based on various combinations of Miller, Bittner, Garlepp,

Wiggers, and Fisher. These remaining rejections were presented only with respect to dependent claims. In view of the arguments presented above, applicant submits amended claims 1 and 12 are patentable in view of the cited references.

Given that claims 2-5, 7, 9-11 depend from claim 1 and claims 13-18, 20 depend from claim 12, applicant respectfully submits claims 2-11 and 13-18, 20 are likewise patentable under 35 U.S.C. § 103 in view of the cited references.

Applicant respectfully submits that the rejections under 35 U.S.C. § 103 have been overcome.

Conclusion

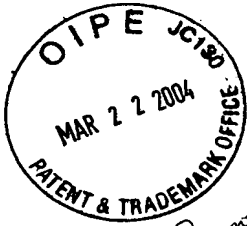
In view of the amendments and arguments presented above, applicant respectfully submits the applicable rejections and objections have been overcome. Accordingly, claims 1-5, 7, 9-18, and 20, as amended, should be found to be in condition for allowance.

If there are any issues that can be resolved by telephone conference, the Examiner is respectfully requested to contact the undersigned at (512) 306-9470.

Respectfully submitted,

Date March 17, 2004 William D. Davis
William D. Davis
Reg No. 38,428

Encl: Information Disclosure Statement and PTO-1449
Replacement Sheet for Figures 1-2



Drawing Change Approved 4/5/04

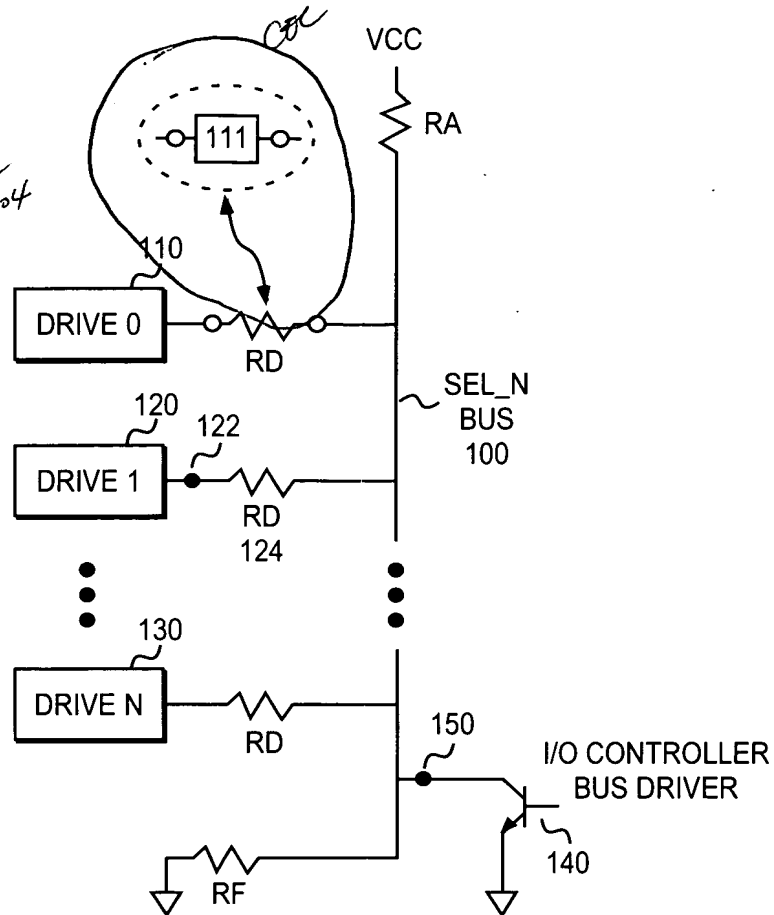


FIG. 1

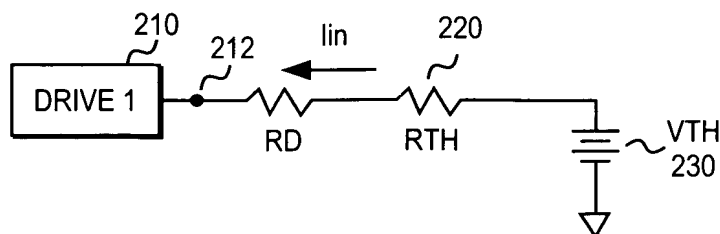


FIG. 2